



GOVERNMENT OF INDIA
MINISTRY OF TOURISM & CIVIL AVIATION
(COMMISSION OF RAILWAY SAFETY)

RAILWAY ACCIDENT INVESTIGATION

REPORT ON DERAILMENT

OF

DOWN ASSAM MAIL

BETWEEN

SAMUKTALA ROAD & SALSALABARI STATIONS

OF

N. F. RAILWAY

ON

28TH SEPTEMBER, 1967

C O R R I G E N D U M

<u>Page No.</u>	<u>Para No.</u>	<u>Line</u>	<u>For</u>	<u>Read</u>
Summary	-	3	North-East	Northeast
-do-	-	10	YDM4	YDM-4
-do-	2(a)	Last	Tempering	Tampering
1	2(a)	6	appended	appended-
			Annexure I	Annexure I
2	3(a)	4	North-East	Northeast
2	3(b)	5	Add 'derailed' between 'coaches'	and 'to'
4	7(b)	2	and	end
	1st sub-para			
5	9(b)	3	Guards,	Guards'
			Lt Gen. Khanna	Lt. Gen. Khanna,
			Commandant	Commandant
6	1-	1	infringement	infringements
6	-	5	FEATURE	FEATURES
7	17(a)	6	Daur Down	Duar for Down
7	18	1	he said when	he said: When
	(1st sub-para			
7	-do-	4	objects when	objects. When
-do-	-do-	Last	say if the	say if he
8	-	2	when	When
8	24	1	hour	hours
-do-	-do-	2	afterward	after-wards
-do-	-do-	10	seen	seen
9	26	5	yellow	yellow
12	45(a)	2	in subsequent	on subsequent
13	46(a)	6	box	boxes
14	47(c)	6	fish	fish bolt
14	-do-	10	fish plate bolt	fish bolt
14	-do-	11	materials	materials
14	-do-	16	R 50	R 30
14	47(d)	4	plates	planes
do-	-do-	5	plate	plane
do-	47(e)	8	as obvious	was obvious
do-	-do-	-do-	the right rail	the rail
do-	47(f)	3	Annexure III	Annexure III**
do-	-do-	8	varsines	versines
do-	-do-	9	(Annexure IV)	(Annexure IV)**
do-	-		Add ** Not reproduced as the last line.	
18	49(c)(ii)	7	Started	starting
18	50(a)	9	of dents	of 7 dents
1	52(c)	1	'chulhas'	'chulhas'
do-	52(d)	14	on such	in such
do-	52(e)	5	the eyes	his eyes
22	54(b)(ii)	3	had	has
24	-	5-6	Add 'Appendix 'B' between 5th &	6th lines.
do-	1.1	4	speed	speeds
25	5	3	being notified	being maintained
				satisfactorily
				standard time
				is not being
				notified.

SUMMARY

Date	..	..	..	28th September, 1967.
Time	..	..	..	03.10—03.12 hours.
Railway	..	..	..	North East Frontier.
Gauge	..	..	..	Metre.
Location	..	..	..	KM 245/5-15 between Samuktala Road and Salsalabari stations on the Fakiragram-Alipur Duar Junction Section.
Nature of Accident	..	..	..	Derailment.
Train involved	..	..	..	4 Down Assam Mail.
Consisting of	..	..	..	22 bogie-coaches hauled by Diesel Loco YDM 4 6128.
Estimated speed at Derailment	..	..	..	Not less than 80 Kmph.
System of operation	..	..	..	Absolute Block System.
Number of tracks	..	..	..	Single.
Gradient	..	..	..	Level, preceded by a falling gradient of 1 in 400.
Alignment	..	..	..	Straight, following a right hand 2° curve.
Weather	..	..	..	Cloudy.
Visibility	..	..	..	Normal, by the engine head light.
Casualties	..	..	..	15 dead and 40 injured, of whom 19 were grievously hurt.

Cause—

- (i) Derailment of the loco of its rearmost wheels at KM 245/5 .. In all probability, Speed in excess of authorised maximum, combined with track irregularities.
- (ii) Crash at KM 245/10-13 .. Tampering with track. One rail joint was opened and the running on end of rail raised.

Responsibility—

- (i) Derailment at KM 245/5 .. Driver who worked the train at excessive speed.
- (ii) Tempering with track .. Not known.

GOVERNMENT OF INDIA
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(COMMISSION OF RAILWAY SAFETY)

From

The Additional Commissioner of Railway Safety,
Northern Circle,
Lucknow.

To

The Secretary to the Government of India,
Ministry of Tourism and Civil Aviation,
New Delhi.

(Through The Commissioner of Railway Safety, Lucknow)

Sir,

In accordance with Rule 10 of Railway Board's Notification No. 59-TTV/42/1, dated 11th April, 1966, I have the honour to report the Results of my Inquiry into the Derailment of 4 Down Assam Mail between Samuktala Road and Salsalabari stations on the Fakiragram-Alipur Duar Junction Metre Gauge Section of the Northeast Frontier Railway at about 03.10/03.12 hours on 28th September, 1967.

2. *Inspection and Inquiry*—(a) I inspected the site of accident and the affected stock on 1st October in company with the Chief Mechanical Engineer, Deputy Chief Mechanical Engineer (G), Deputy Chief Engineer (North), the Superintendent of Railway Police and District Officers of the Railway. The Permanent Way and the Rolling Stock were also inspected with the Chief Engineer and other Officers on various occasions during the Inquiry. A plan* of the accident and 12 photographs,* including close-ups are appended Annexure I and Annexure II.

(b) A Press Notification was issued on 29th September, inviting members of the Public who had knowledge in connection with the accident to appear at the Inquiry which I commenced on 2nd October at Alipur Duar, or to communicate with me by post.

(c) The Civil Authorities and the Police were duly notified. The Officers present at the Inquiry were—

Railway

- | | |
|----------------------------|--------------------------------------------|
| (i) Shri K. Vaidyanath .. | .. Chief Mechanical Engineer. |
| (ii) Shri M.I. Chhaya .. | .. Chief Engineer. |
| (iii) Shri A.N. Sur .. | .. Deputy Chief Engineer (North). |
| (iv) Shri G. Chandra .. | .. Deputy Chief Mechanical Engineer (G). |
| (v) Shri N.N. Choudhary .. | .. Deputy Chief Mechanical Engineer (RL). |
| (vi) Shri Tej Ram .. | .. Transportation Superintendent (Safety). |

Police

- | | |
|-----------------------------|-----------------------------------------------------|
| (i) Shri S.C. Sarkar .. | .. Superintendent/Railway Police Siliguri. |
| (ii) Shri S. Chakraborty .. | .. Deputy Superintendent, Railway Police, Siliguri. |

Civil

- | | |
|------------------------|----------------------------------------------------------------------------------------|
| Shri L.R. K. Prasad .. | .. Sub-Divisional Officer, Alipur Duar (Representing Deputy Commissioner, Jalpaiguri). |
|------------------------|----------------------------------------------------------------------------------------|

*Not reproduced.

(d) The evidence of 70 witnesses was recorded.

NOTE—In this Report—

the terms right/left, leading/trailing, and front/rear, where used in respect of the train, are in reference to its direction of travel;

the terms in advance of (ahead of)/in rear of (behind), in relation to a location are used to define a position on the line beyond/before reaching the location, as seen from the approaching train;

the abbreviation Km/Kms denotes Kilometre/Kilometres with reference to Telegraph posts alongside the Line. Kmph stands for Kilometres per hours.

3. *The Accident*—(a) The west-bound 4 Down Assam Mail, which left Gauhati in the evening of 27th September, 67 became derailed shortly after 03.10 hours on 28-9-67 between Samuktala Road and Salsalabari stations on the Fakiragram-Alipur Duar Junction single line meter gauge section of the North East Frontier Railway. The accident occurred on a 10 feet high bank formation between Kms. 245/5 and 245/15.

(b) The train hauled by a Diesel locomotive of the YDM4 class, comprised 22 bogie-coaches, 12 of which went off the rails. The locomotive parted from the train formation and came to rest 236 feet ahead of the leading coach, with its rearmost pair of wheels derailed to the right and its cattle guards punctured on the right side, more or less in the alignment of the track rail. The first 8 coaches to the right, remaining coupled and disposed in "concertina" fashion. The leading draw bar of the 4th coach broke but was, nevertheless, in position with the hook on the rear buffer of the 3rd coach, keeping them together. While the 1st and 2nd coaches capsized, the 3rd, 4th and 5th coaches plunged down the bank and stood at varying inclinations to vertical with their wheels partly buried in the ground. The 6th coach was on the embankment, askew and telescoped with the coaches on either side. The 7th and 8th coaches remained on the formation. The track, specially under the 8th coach was destroyed. The 9th and 10th coaches were lifted and thrown over to the left. The front buffer of the 9th coach had, coupled to it the rear buffer head of the 8th coach which had broken away from its underframe. The 9th coach—a wooden bodied Dining Car—was almost completely burnt. The 10th coach lay across the trough floor of the 8th coach, smashing nearly half its superstructure. The 11th and 12th coaches derailed to the right without much disalignment. The 13th to the 22nd coaches were intact on the track rails.

4 *Casualties*—As a result of this accident, 14 persons travelling in the train (including one of the Train Conductors) died on the spot and one later in the Railway Hospital at Alipur Duar, bringing the death roll to 15. 40 persons in the train were injured, of whom 19 were grievously hurt. I visited the hospital at Alipur Duar on the 2nd and the 9th October and found the patients progressing satisfactorily.

5. *The Train*—(a) The composition in the marshalling order was as under—

(i) Locomotive

No. 6128-YDM4-Diesel Electric, built by Messrs. Alco Products, Inc. U.S.A., in November, 1963. In service since December, 1964. Fitted with "Teloc" Speed Indicator-cum-Recorder—there was no recording chart. Vigilance control was out of commission. Head light was in working order.

							Built in Year
(ii) Coaches—							
No. 2426 TLR (Third class with luggage & brake Van)	Steel body/	I.R.S.					
Bogies	..	..	..	..	..	..	1963
No. 1627 GT (Third class)	Steel body:	I.R.S.	Bogies	..	..	..	1964
No. 1853 GT (Third class)	Steel body:	I.R.S.	Bogies	..	..	..	1966
No. 1557 GTY (Third class with compartment for females)	Steel body:	I.R.S.					
Bogies	..	..	..	..	..	..	1960
No. 1745 GT (Third class)	Steel body:	I.C.F.	Bogies	..	..	..	1964
No. 2023 GTCW (Third Class, 2-Tier sleeper)	Steel body:	I.C.F.	Bogies	..			1966
No. 317 FC (First class)	Steel body:	I.C.F.	Bogies	..	..	..	1966
No. 105 FC (First class)	Steel body:	I.C.F.	Bogies	..	..	..	1966
No. 238 CD (Dining Car)	Wooden body with steel panelling;	I.R.S.	Bogies	..			1964
No. 2440 TLR (Third class with luggage & Brake Van)	Steel body:	I.R.S.					
Bogies	..	..	..	..	..	..	1966
No. 1600 GT (Third class)	Steel body:	I.R.S.	Bogies	..	..	..	1965
No. 1130 GST (Second & third class)	Steel body:	I.R.S.	Bogies	..	..		1955/56
No. 1837 GT (Third class)	Steel body:	I.R.S.	Bogies	..	..	..	1966
No. 2034 CNT (Third class, 3 tier sleeper)	Steel body:	I.C.F.	Bogies	..			1964
No. 1747 GT (Third class)	Steel body:	I.C.F.	Bogies	..	..	..	1964
No. 327 FC (First class)	Steel body:	I.C.F.	Bogies	..	..	..	1966
No. 780 GSY (Second class with compartment for females)	Steel body:						
I.R.S. Bogies	..	..	..	..	..	..	1956
No. 1801 GT (Third class)	Steel body:	I.R.S.	Bogies	..	..	..	1966
No. 1740 GT (third class)	Steel body:	I.C.F.	Bogies	..	..	..	1964
No. 103 FC (First class)	Steel body:	I.C.F.	Bogies	..	..	..	1966
No. 2434 TLR (Third class with luggage and Brake Van)	Steel Body:						
I.R.S. Bogies	..	..	..	..	..	..	1966
No. 922 RA (Inspection carriage)	Wooden body with steel panelling;	I.R.S.					
Bogies	..	..	..	..	..	..	1961

(b) The total length and weight of the train including the locomotive, were 451.75 metres (1482.13 ft.) and 799.77 tonnes (787.18 tons) respectively. The train was fully vacuum braked and had a calculated brake power of 526.96 tonnes (518.66 tons).

6. *Passenger occupation*—It has been estimated by the Railway Administration that the number of passengers travelling in the train at the time of the accident was about 1441, as against a seating capacity of 1033.

7. *Damage*—Significant items of damage were as below—

- (a) *Locomotive* — (i) Both cattle guards displaced from the normal position.

Leading cattle guard: Front and bottom plates torn inward at the right underside corresponding to position above right rail; front plate also cracked on the top above the dislocated portion; left bottom corner dented. *Trailing cattle guard:* Bottom plate torn for a width of $4\frac{1}{2}$ " outward, at a position 7" away from the right rail.

- (ii) Rear Buffer inner spring broken; Coupling pivot pin and buffer head deficient. The buffer head was found on the embankment about 228 feet behind the locomotive and a broken piece of the pivot pin was recovered from near the first coach.

- (iii) Sand pipe bracket on the leading trolley of right leading wheel broken and portion of sand pipe missing. These were found near the 6th coach about 500 feet behind the locomotive.

- (iv) Right rear loading pad shoe cracked from peripheral welding at the neck and holding set screws of the loading pads on the left sheared off.

- (v) Dent marks on treads of all wheels, except the first pair, the left wheels of the second, third and fourth axles, and the right wheel of the sixth axle.

- (b) *Rolling stock*—1st to 7th Coaches: Body panels generally deformed and damaged. Roof of the 8th coach broken and one door worked out. Draw bars bent and draw bar springs twisted (except at the leading end of the 1st coach). Buffer heads of the 3rd (both), 4th (coupling end), 5th (both) and 6th (hook end) coaches broken. Pull rods of the 1st and 2nd coach bent.

8th coach: Hook end draw bar and spring twisted; vertical pipe broken and coupling- and under frame severely bent. Compartments A., B. and C smashed and all berths damaged. Half the body collapsed over the trough floor with the under frame of the 10th coach lying across.

9th coach: Dining car (wooden body)—Superstructure burnt. Underframe bent and twisted. Both axles of the trailing trolley bent.

10th coach: Both draw bars, pull rod, brake shaft, coupling end head stock and longitudinal girders bent; one vacuum cylinder, and some foot boards broken. Body bent and bulged and floor of luggage compartment dismembered. Front axle of the leading trolley badly bent.

11th coach: Hook end trolley damaged; both bars bent and spiral springs twisted.

12th coach: Hook end panel broken.

- (c) *The Permanent Way*—In addition to denting of sleepers, dog spikes, bolts and nuts and rail anchors over a length of nearly 1650 ft., the track over a length of about 200 ft. was severely damaged. One of the right rails was found badly twisted with one end buried in the ground at a distance of about 10 ft. to the right of Coach No. 1745. A piece of this rail 4'—10" long had broken away and was recovered on 8th October, 1967 from below the underframe of coach No. 1557 GTY.

(d) The damage to Railway assets was estimated at Rs. 4,48,041.	Rs.
Locomotive	543
Other rolling stock including fittings	3,85,898
Permanent Way	61,600
Total	4,48,041

II—RELIEF AND RESTORATION

8. *Intimation of the Accident*—Information that something was amiss with 4-Down Assam Mail was conveyed to the Train Control office at Alipur Duar at about 03·15 hours by the Assistant Station Master on duty at Salsalabari, who found that the train had stopped beyond the Down Distant Signal. At about 03·30 hours he noticed a fire at the site of stoppage and advised the Control accordingly. The Fire Brigade at Alipur Duar was summoned.

The Control was intimated of the accident at about 03·45 hours by the Train Guard on portable telephone. The Accident Medical Van and Brake Down train were promptly called out. The Accident Siren was blown and the local Police and Civil Authorities advised. The District Medical Officer, Cooch Bihar, the Deputy Commissioner, Jalpaiguri, and the Military Authorities at Hashimara were also informed.

9. *Succour and Medical Attention*—(a) Medical assistance and relief reached the site as detailed below:—

- (i) Assistant Medical Officer in charge, Alipur Duar Railway Hospital with Ambulance, another Doctor and staff at about 05·00 hours.
- (ii) Accident Medical Relief train from Alipur Duar, with seven Doctors and other staff at 05·05 hours.
- (iii) Fire Brigade from Alipur Duar, shortly after 05·00 hours.
- (iv) Civil Ambulance Van with Doctors from Cooch Bihar, at about 06·00 hours.
- (v) Military Ambulance from Hashimara, at about 07·10 hours.

(b) In the meantime, Dr. A.G. Roy and Dr. A.G. Moitra, Railway Medical Officers who happened to be on the ill-fated train attended to the injured on the spot with the equipment in the Guards, "first aid boxes". The Chief Commercial Superintendent of the Railway who was on the train assumed charge of relief operations. Lt Gen. Khanna Commandant, National Defence College, also a passenger, mobilised the army personnel in the train for relief work and rendered valuable assistance in extricating passengers from capsized coaches and in combating the fire in the Dining Car.

(c) After possible treatment at site, the injured were removed to the Civil and Railway Hospitals at Alipur Duar through the Accident Medical Relief Train and the Ambulance Vans, commencing from about 06·00 hours. 3 injured army personnel were taken charge of by the Hashimara Military Ambulance. 27 were admitted to the Civil Hospital and 11 to the Railway Hospital of whom 1 died and 8 were discharged after due medical attention. Later, all the patients in the Civil Hospital were transferred to the Railway Hospital for further treatment.

10. *Arrangements for Onward Journey*—The rear unaffected portion of the train along with its contingent of passengers was drawn from the site and taken to Samuktala Road station at about 07·00 hours on 28-9-67. There, the passengers were transhipped into the Down Broad Gauge Special Rake which left Samuktala Road at 09·36 hours and picked up some more passengers en-route at Salsalabari. (Some passengers were conveyed to Salsalabari from the accident site through a Metre Gauge Rake at about 09·10 hours). One UP Rake Special from Alipur Duar arrived at site at 08·15 hours with light refreshments (including milk and drinking water) and 16 vendors. The needs of the passengers still at site were thus catered for. This rake on its return journey brought some passengers to Alipur Duar, from where they availed the connecting trains.

11. *Restoration*—The Superintendent of Railway police gave permission for restoration at 11·50 hours on 28-9-67. The restoration operations involving the laying of a diversion on the existing formation and the shifting of the infringing coaches—TLR 2426 (front end only),

GTCW. 2023, FC317, FC 105 and TLR 2440—were commenced thereafter. The infringement were cleared at 00·15 hours on 30-10-67. The track was attended to and certified fit at 02·15 hours for movement at a restricted speed of "Stop Dead and Proceed". The Down Alipur Duar Goods was the first train to pass over the site at about 03·15 hours on 30-9-67.

III—SECTIONAL FEATURE

12. *The Site*—The accident occurred at Kms. 245/5 to 245/15 between Samuktala Road and Salsalabari stations on the Fakiragram-Alipur Duar Junction single line Metre Gauge section of the Notheast Frontier Railway. The alignment in this portion runs east-west and traverses through plain country. The area is generally open with paddy fields on either side. There are three villages nearby on the right. The Broad Gauge line is on the left, at a distance of about 200 ft. The alignment is straight following a right hand 2° curve and is on the level, preceded by a falling gradient of 1 in 400. The formation is on a bank about 10 feet high.

13. *The Permanent Way*—The Permanent way consists of 60 lbs. flat footed RBS rails, 39 feet long, rolled in the years 1943 and 1944, on wooden sleepers to a density of N+3. Most of the sleepers are oil treated, laid generally without bearing plates. 2 dog spikes have been used per rail seat, including the joints. 24 rails anchors of the Fair 'V' type have been provided in each rail length. The track is stone ballasted, with a cushion of about 8 inches below the sleepers.

14. *Headquarters and System of working*—(a) Fakiragram to Alipur Duar Junction is a controlled section—the train control office being situated at Alipur Duar. Alipur Duar is also the headquarters station of the Operating, Commercial, Mechanical & Medical districts. The Headquarters of the Railway are at Pandu. The District Engineer is headquartered at Bongaigaon and the Assistant Engineer at Alipur Duar Junction.

(b) Trains are worked on the Absolute Block system with Neale's Single line Electric Block Instruments. Samuktala Road and Salsalabari are interlocked to Standard III with Multiple Aspect Upper Quadrant signals.

(c) Security patrolling with State participation introduced in 1965 having been discontinued from 1-4-67, patrolling round the clock by gangmen of the Engineering Department was in force on the section since 25-4-67.

15. *Site of Accident with reference to stations*—(a) The kilometrage of stations mentioned in the report as reckoned from the centre of Saraighat Bridge over the Brahmaputra river near Gauhati are as under—

Gauhati	..	..	..	11
Centre of Saraighat Bridge	..	..	..	0
Changsari	..	..	..	11
Bongaigaon	..	..	..	143
Fakiragram	..	..	..	183
Pratapkhata	..	..	..	189
Gaubari	..	..	..	202
Srirampur Assam	..	..	..	214
Jorai	..	..	..	224
Kamakhayaguri	..	..	..	232
Samuktala Road	..	..	..	242
Site of Accident	..	..	..	245/5-15
Salsalabari	..	..	..	247
Alipur Duar Junction	..	..	..	255

(b) There are on the average 15 telegraph posts to a kilometre in the affected portion. In the rest of the section, the number varies from 16 to 18.

16. *Weather and Visibility*—At the time of the accident, the night was cloudy and dark although the moon had risen. The visibility was normal by the engine headlight.

17. *Maximum Permissible Speed*—(a) The maximum permissible speed for passenger trains hauled by YDM-4 class locomotive (with electrical equipments prepared for high speed operation) is 65 Kmph between Changsari and Fakiragram, and 75 Kmph between Fakiragram and Alipur Duar subject to a restriction of 65 Kmph through station yards in this section. According to the Working Time table, the following permanent speed restrictions were in force between Fakiragram and Alipur Duar Down trains—(i) 50 Kmph over the facing points of the Engineering siding between Srirampur Assam & Jorai; and between Jorai and Kamakhayaguri (ii) 15 Kmph at the Down facing points of Pratapkhata and Gaubari stations (iii) 65 Kmph over the 6° curve between Alipur Duar and Samuktala Road at KM 257-244*.

(b) The booked speed of 4 Down Assam Mail was 64 Kmph between Fakiragram and Alipur Duar and there was no temporary restriction in force on the section.

(c) YDM4 6128 was one of the ten Diesel locomotives whose electrical equipments had been prepared for high speed service as on 20-9-67.

[The curve at Km $\frac{244}{15} - \frac{244}{5}$ is 2°, not 6°]

IV—SUMMARY OF EVIDENCE

Evidence regarding the Train—

18. Driver, Bhola of 4 Down Mail, which left Gauhati at 19.35 hours on 27-9-67, right time, stated that after stopping at Jorai (arrival 02.24 hours and departure 02.47 hours on 28-9-67) for the unscheduled crossing of 3 Up Mail, the train ran through Kamakhayaguri at 02.59 hours and Samuktala Road at 03.08 hours. The speed of his train was 61/62 Kmph and on coming out of the curve ahead, he found that the Distant Signal of Salsalabari was "yellow". He closed the throttle and as he proceeded onwards, heard a loud sound and noticed sparks in front of the Engine on the right side. He also felt a pull on the engine from the rear—by this, he meant that the engine went back slightly, as if it was pushed by or thrust back by some object in front. After this, the engine began to move up and down on its forward run. Immediately he applied the vacuum brake, but found that the brakes had already been applied. He applied the independent brake and at the same time found that his engine had come to a halt. On looking back, he found the engine at a considerable distance from the stock behind.

Replying to questions he said when he came on the straight, his attention was completely focussed on the track and he did not notice any obstruction or object, nor anything unusual. He could see under the headlight clearly for about 100 yards ahead. The loud sound he heard appeared to be the result of impact between two metallic objects when he examined the engine after the accident, he found the cow-catcher damaged on the right side, one sand pipe missing and the rearmost wheels derailed. His loco did not have the speed recording chart and none of the Diesel locos on passenger trains which he had driven had the chart. The time according to the clock on the Speed Recorder when his engine came to a stop was 03.14 hours. He could not say if he felt a "drag" before the locomotive came to a stop.

19. Driver's Assistant, Sukha Prakash Ghosh, stated that the journey up to Samuktala Road was normal. The train ran through Samuktala Road and "was passing out the right hand curve at about 03.10 hours" on 28-9-67 when he made entries in the log book after personal observation. As he sat down after completing the log, he heard a loud sound in the front. The engine went back slightly and then went ahead, jumping for some distance before it came to a stop. He did not notice any sparks.

To questions, he said : The entry made by him in the log book in regard to the speed of the train was 60 kmph. when he was shown the entries which exhibited an over-writing (80 corrected to 70 and later to 60), he stated that this was due to the "jerking motion" and his hand was not steady. He initialled the over-writing after the accident at the instance of Shri D. Terry, Jr. Loco Inspector.

20. Guard M.S. Banerjee of 4 Down Mail, stated that the journey from Gauhati was uneventful and the train reached Jorai on time. It was detained at this station for 22 minutes (arrival 02.28 hours and departure 02.50 hours on 28-9-67) for crossing 3 Up. Leaving Jorai he ran through Kamakhayaguri at 02.58 hours and Samuktala Road at 03.07 hours. After passing Samuktala Road when his train came out of the curve on to the straight he felt a jerk and fell down to his right. When he tried to get up, he could not, as his coach was oscillating from side to side. Within about 5 seconds, there was a second jerk which pushed him back slightly and his coach came to a stop with a further light jerk. He had set his watch by the Station clock at Gauhati and had also tallied it with the Driver's watch. Under instructions from the Chief Commercial Superintendent who was on the train, he explored the bank slopes in the area for loose fittings, such as bolt, nut or fish plate; he did not find any.

21. Ticket Examiner N.R. Chakraborty, travelling in the 16th coach stated that when the train was on its way to Salsalabari, he heard an unusual sound, with a couple of heavy jerks. The sound was as if something very heavy was being pulled over the track. The train stopped immediately. He could not identify the sound, but felt that a battery box or dynamo had fallen down and was being dragged.

22. Ticket Examiner D.C. Chakraborty, travelling in the 14th coach said that between Samuktala Road and Salsalabari he suddenly received a severe jerk and heard a roaring sound. It was as if something was being dragged and it was from the front. Thereafter the train stopped.

23. Shri R.K. Mitra, Railway Contractor, in first class coach No. 317 said that near about the site of accident his bogie had vertical bumps. There was also lateral movement. The train was travelling at high speed (may be about 40 miles per hour) and it appeared to him that the speed of the train on that day was higher than usual, as he had been travelling in that section for a long time.

24. Lt. Gen. M.M. Khanna travelling in Coach 317, stated that at about 03.00 hour or shortly afterward, walking through the corridor from the bathroom to his compartment he found it difficult to balance himself without holding the sides. He felt the track to be uneven and the train was going somewhat faster. He said to himself "I hope there won't be a mishap". Back in the compartment and sitting on his bed, he again said to himself "I think this train is going to derail". Then immediately after it did derail. At about 05.00 hours he met the Engine Driver, asked him the cause of the accident and "accused him travelling too fast". He also examined the engine and found the right cow catcher damaged. The rear wheels had come off the rails. The Driver said that it was sabotage. So, along with him he examined the track. It did not seem to be in a very good state, according to him as a layman, as many of the sleepers were, old and not in a very good condition. Part of the rail was completely ribbed, which he thought was due to overturning of the leading carriage, but at one place just beyond the leading carriage towards the engine side, one fish plate on the right side was missing and the rail was protruding upwards. He came to the conclusion that it could have been a case of sabotage and left it to the railway experts to give a final decision whether the accident was due to sabotage or overspeeding. From his personal knowledge and his discussions with the local Commander, there are a lot of fifth column activities in that area and there had been a previous attempt at sabotage. When he was commanding NEFA COYS, one of his military trains was also derailed about 20/30 miles away in the same area.

25. Shri Binda Prasad Singh, Assistant Station Master, Samuktala Road, said that 4 Down Assam Mail passed through his station, at 03.14 hours and he noticed nothing irregular in the train. The station clock was out of order and he read the time on his wrist watch which was later tallied with the Train Guard's watch by the Assistant Engineer and found 6 or 6½ minutes fast. He saw the sectional patrolmen Santosh and Sarwan coming from Kamakhayaguri at about 03.00 hours. They did not proceed towards Salsalabari on their beat, but remained at the station itself till he sent for them at 03.30 hours.

26. Shri J.R. Halder, Assistant Station Master, Salsalabari stated that 766 Down Goods train passed his station at 02.43 hours and he received the "Line clear enquiry" from Samuktala Road for 4 Down Assam Mail at 02.54 hours. At about 03.00 hours after replying the Line clear enquiry, he had the Down Distant Signal kept at green (90° aspect) and the Home Signal yellow (45° aspect), corresponding to reception on the main line, as he had not yet obtained Line clear from Alipur Duar. At 03.11 hours after obtaining Line clear the Home, Starter and Advanced Starter were placed in the 90° aspect (green) for the run-through. He received the "train entered Section" report from Samuktala Road at 03.13 hours.

27. Train Examiner R.K. Dhol stated that he examined the rake of 4 Down Assam Mail at Gauhati on 27-9-67 between 18.35 and 19.25 hours and carried out some minor repairs. Out of 44 vacuum cylinders on the train 42 were active, with the vacuum gauge reading 55 cms. on the Engine and 50 cms on the Rear TLR. Based on his examination, he prepared the Train Fit and Vacuum Active Certificate (Form LCW-113) which was duly signed by the Driver and Guard.

28. Shri S.M. Bammi, District Mechanical Engineer (Diesel), Siliguri, stated that he examined the Locomotive 6128 YDM4 in Alipur Duar Shed on 2.10 and 3.10.67 initially without being dismantled and subsequently after lifting the loco and running out the trolleys. In his view there was no defect in the loco which could have caused or contributed to the derailment and the associated accident to 4 Down Assam Mail on 28-9-67.

29. Shri P.R. Narasimhan, District Mechanical Engineer, Alipur Duar, stated that he had examined the coaching stock to the extent possible and did not find any defects which could have caused or contributed to a derailment. He had seen from the Engine Repair Book of YDM4 6128 that no remarks had been given against 3 items booked by the Driver of 4 Down Mail at Gauhati on 27-9-67. In his opinion these would not affect the road-worthiness of the loco in any way.

Evidence regarding the Track—

30. Driver Sumer, of 667 Down Goods train which immediately preceded 4 Down Assam Mail stated that he left Samuktala Road at 02.25 hours and arrived Alipur Duar at 03.05 hours after running through Salsalabari. The run from Samuktala Road to Salabari was smooth and he did not feel any jerk or lurch anywhere in the section. He must have passed the site of accident at 02.40 hours. He did not see any person near the track or noticed anything unusual on the run.

31. Patrolman Santosh, a daily rated casual employee, stated that he and Sarwan took over patrol duty at 22.00 hours on 27-9-67. Having reported to the Station Master, Salsalabari he left on his beat towards KM 239/14-15. He passed KM 245/5-6 at about 23.30 hours and everything was normal. Replying to questions he said: The beat was covered twice during the duty period of 22.00 to 06.00 hours. After going up to the end of the beat (exchange point) they normally took an hour's rest, after which they walked towards Salsalabari reaching the station between 05.30 and 06.00 hours. He was on patrol duty in this beat since the last 5 months and had not come across any loose/damaged fittings or anything unusual.

32. Patrolman, Sarwan, also a daily rated casual employee, stated that on 27-9-67 leaving Salsalabari at about 22.00 hours, he walked on the alignment towards Samuktala Road over

the right rail and his partner Santosh walked on the left rail. He did not see any mark on the sleepers, or on the rails, or elsewhere. He did not also notice any broken or damaged material. He was on patrol duty for the last 5 years and during this period he had come across cases of fish bolts missing and dog spikes coming out, three to four times. The last such occasion that he could remember was about 2 months ago in the day shift, when he noticed a bolt missing from a rail joint on the bridge near Samuktala Road.

33. Keyman of the Section gang 3/AF, Aboy Chandra Modak, stated that he had carried out the daily inspection on 27-9-67 and found the track fittings and fastenings in order. He did not notice any bad spot in the track requiring immediate attention of the mate.

34. Mate of Gang 3/AF, Baldeo, stated that the track in the affected portion was last attended on 7-9-67 when it was through packed. His gang length was quite sound and there was no instance of tampering with the track in his section, except on 30/31st August 1967 when he was told that Patrolman Santosh had found 3 bolts opened from the rail joints. He had no quarrel with the gangmen or members of the Public and his relations were cordial with every one.

35. Assistant Permanent Way Inspector, M. Prasad, stated that KM 245/5-6 was not a bad spot and no frequent attention was necessary. The Hallade Track Recorder which ran over the section in 1966 had not reported anything adverse on this stretch. He had trollied over this section in the month of September on the 12th, 14th, 22nd and the 25th. He had also inspected the section in the brake van on the 16th and 17th September. He had not carried out any regular night inspection of patrollers, except when travelling by brake van.

36. Permanent Way Inspector G.C. Barman Rajkumar, stated that on arrival at the site of accident at about 05.00 hours on 28-9-67 he trollied up to Samuktala Road with the Gang Mate and checked the gang tools. He found them correct. On return, he recorded track measurements jointly with the supervisory officials of other departments for 300 feet in rear of the first point of drop and 150 feet ahead of the derailed loco.

He had trollied over the section on the 2nd, 14th, 15th, 19th and 21st September and found it normal.

37. Shri J.M. Gupta, Assistant Engineer, who reached the site of accident at 04.50 hours on 28-9-67, stated that the first mark of derailment was noticed on a sleeper at KM 245/5-6, 220 feet in rear of the last coach RA 922. (This sleeper was reckoned as 'O' and sleepers from thereon numbered consecutively in the direction of motion. The rail panel containing this sleeper was numbered as '1' and others thereafter, consecutively. L=Left and R=Right Rail). There was no riding mark on the rails. From the point of first drop to the 24th rail joint, disturbance to the track was minor. From the 24th rail to the 26th rail, sleepers had been damaged and had to be replaced. The right hand joint of rail 27 and 28 (R27/R28) was separated. Both the "leaving and landing ends" of the rails indicated severe hammer action on rail heads. R28 was lying out of its alignment in a bent condition and away from joint R27/R28, the gap between the rail ends being 7'-6". After the removal of debris the fish plates of this joint were found between the 3rd and 4th sleeper of Rail panel 28. One fish bolt without nut in good condition was lying near joint R27/R28. The condition of fish bolt holes in the rails was normal. R29 was not seen anywhere near about. One rail was later found, bent to 'S' shape, behind coaches 1745 and 2023, with one end buried in the ground and the other end broken. The buried end when exposed was found normal. R30 and R31 were out of alignment, uprooted from the sleepers and tilted, with joint R30/R31 intact. The "landing end" of R30 had been extensively bent down, with two grooves on the head-presumably dent marks of wheel flange or tyre. The rail had been pushed back and the facing end was without fishplates and bolts. Two fishplates in good condition, presumably of joint R29/R30, were located on the right bank slope—one opposite joint L29/L30 and the other opposite joint R31/R32. One fishbolt hole of R30 appeared elongated.

Security patrolling was in force on the Section since 30-9-65, with one home guard or civil police, one village Chowkidar and one gangman (casual labour specially appointed for the purpose). From 1-4-67 this system of patrolling was stopped, with the State Police withdrawing their participation and from 25-4-67 patrolling was started with gangman in batches of two each. In the recent past, there had been two cases of tampering of track between Alipur Duar and Samuktala Road, both of which were detected by the Patrolmen on duty, before an accident could occur. He trollied from Samuktala Road to Salsalabari on 14-9-67 and found everything normal. There had been no case of rail fracture in the section. The present gang strength of 2.5 men per mile was inadequate and strength as per "Mafflin's" formula was yet to be introduced.

38. Shri H.N. Mukherjee, District Engineer, corroborated the site observations made by his Assistant Engineer and stated that in his opinion, the first point of drop at sleeper 'O' was of a coach and was the effect of the obstruction created ahead, which the engine had encountered. The type of damage suffered by the front cattle guard; the separation of the joint at Rail R27-28, finding of one fishbolt without nut in good condition very near joint R27-28, heavy dent on rail ends "leaving R27" and "landing R28", were only possible when the fishplates had been removed and the rail ends had lost rigidity. The severe damage to rail end R30 at joint R29/R30 which was not possible in a built up track suggested that the cause of the accident was due to tampering of track. It appeared that at joint R29/R30, "the landing end" of R30 must have been lifted up 4" to 5" above the track level by removing the fishplate and fishbolts of the joint thus causing a formidable obstruction on the track, as well as breaking its continuity.

Since November 1966, there had been five cases of tampering of track in the West Bengal portion of his section and all the cases had been reported to the Officers Incharge, Government Railway Police/Railway Protection Force. He had last trollied over the section on 24-9-67 and had checked the patrol gang.

39. Shri S.C. Sarkar, Superintendent of Railway Police, Siliguri, stated that on arrival at site at about 07.00 hours on 28-9-67, he made a preliminary inspection and found engine No. 6128 YDM 4 standing on the track with the rear wheels derailed to the right and the cow catcher of the engine both in the front and the rear, punctured to the right side almost alongside the right rail facing Salsalabari. On detailed inspection he found four open rail joints and he had them marked as A1, A2, A3, A4, etc., giving odd number to the "leaving" rail heads and even number to the "landing" rail heads. Only at the junction of A1-A2, he could find one fish bolt intact lying outside the right rail. The rail marked A2 had been shifted to the right outside at a distance of 7 ft. longitudinally and 5 ft. laterally. The rail marked A4 was found almost touching the left rail at a distance of about a rail length from A3. After A3 no rail could be found and he presumed that the rail marked A4 had been displaced to its existing position. At none of these open rail joints marked by him, could he find any fish plate or other materials excepting as detailed at A1-A2. The left rail was intact with fish plates and bolts all through, although it was slightly distorted at places. He could also find marks of derailment from the sleeper since marked 'O' i.e. from long before the actual point of derailment of the bogies. He found that the Police and the Railway Protection Force had thrown a cordon.

40. Shri B. Sen, Officer-in-charge, Government Railway Police, Alipur Duar, who reached the accident spot at about 05.10/05.15 hours stated that the site was being guarded by the local police incharge of an officer, along with Army Personnel and the Railway Protection Force. The Rail Joint marked A1-A2 had no fish plates. There was one bolt nearby which appeared intact. He found and took into custody: two fish plates from under coach 105 on 29-9-67; 3 fish bolts, full length—one, a foot away from the right rail underneath coach 105, another 10 feet north of the rail R28 and the third by the side of the fish plates mentioned above; 8 broken bolts—one, 12 feet north of coach 317, two 1 ft. north of coach 1745 and two

near joint R5. and R6; 5 dog spikes from different locations near coaches 1557 and 1745. No reports had been made to him since June 1965 of any theft of Permanent Way fittings between Kamakhyaguri and Alipur Duar.

41. Shri T. P. Pandey, Assistant Security Officer, stated that on arrival at about 04.15 hours, he made arrangements to cordon the affected area and to control the fire in the Dining Car. At about 05.00 hours the local Police officer arrived with constables and helped in guarding the site. In the year 1967, three cases of tampering with track between Alipur Duar and Jorai had been reported to him. From the nature of the complaints made repeatedly he would say that the affected section was vulnerable. When the type of patrolling which was in force till 31-3-67 was discontinued, he did not press for its reintroduction, as he had difficulty in establishing and attributing the cause of loose fittings found in the track to unsocial elements.

Evidence regarding fire in the Dining Car CD 238—

42. Shri Ramu, Masalchi of the Dining Car, stated that the fire broke out as a result of the burning coal from the 'chulhas' being thrown over due to the capsizement. The fire places in the Dining Car remained lit throughout the night. Fire was lit with the help of oiled jute from the engine but no kerosene oil or oil soaked jute was stocked. Only 2 to 2½ kg of Dalda and Mustard oil were carried in the Dining Car at a time and these were kept in the kitchen in the almirah.

43. Shri Surendar Singh, employee on night duty in the Dining Car, said that he was sitting on a stool near one of the doors when he experienced a big shock, as if the train had run against an obstruction and was struck. The Dining Car trembled side-ways and tilted to one side. There was noise of the roof breaking up and the debris were falling. There were four 'chulhas' in the kitchen, of which two had dimmed fire; on the other two there was a thick layer of ashes to preserve the fire for re-use early in the morning. He was definite that no kerosene oil or "any such things for making fire" were stored in the Dining Car.

44. Shri Taj Mohammad, Manager of the Dining Car, stated that the fire in the 'chulhas' was only dimmed for the night, but not extinguished and the Dining Car "caught fire due to its capsizing and getting smashed, being made of wood".

V. OBSERVATIONS AND TESTS

45. *The Locomotive—* (a) After a brief inspection at Salsalabari on 1-10-67, the Locomotive was examined in detail in subsequent days in the Loco Shed at Alipur Duar. The superstructure was intact, except for the separation of the rear loading pad shoe from the welding at the neck and the shearing of set-screws of the left loading pads. These were apparently the effect of the interaction between the trollies of the Loco and its superstructure during the course of the accident. There were hit marks on equaliser seats, horn cuttings, equalising beams, trolley frame, stayplates, etc., indicating that the equalising beams had been lifted high up and the axle boxes had moved up and down. In the leading trolley, the middle wheel brake block cotter clip had sheared off; the safety brackets of the slack adjuster between the front and middle wheels of the trailing trolley were bent and the rear one cracked. There were grazing marks on the outside of the right leading and middle wheels of the trailing trolley. These, the damage detailed in para 7(a)(iii) and the rubbing/hit marks noticed on the other sand pipes and brackets on the right side suggested clearly that the locomotive had met with and mounted a substantial obstruction to its movement on the alignment of the right rail.

(b) A careful examination of the cattle guards revealed that the damaged portions of the two were not in the same alignment. The pattern of damage was also different—in the leading cattle guard the front plate had been punctured and bent inwards, tearing the bottom plate also in the process; in the trailing cattle guard only, the bottom plate was torn over a stretch of 4½", almost corresponding to the flange width of a 60 lb. RBS rail. From this and the impression left on the front sheet, it appeared that the leading cattle guard had encountered

a 60 lb. rail head in front, whereas the trailing cattle guard had contacted the rail head at a level higher than the bottom plate which was hit from the top and torn outwards. The location of the "tear-away" in the two cattleguards vis-a-vis the track alignment, was a pointer that the same rail could not have hit both of them unless after meeting the leading cattle guard and the leading right wheel (with the sand pipe in front), it got bent or deflected to the right, i.e., away from the gauge.

(c) A piece of the 'coupling pivot pin' of the loco rear coupler which had failed was analysed by the Railway's Chemist and Metallurgist. According to his report, the pin was manufactured from steel similar to class III with an equivalent tensile strength of 36.24 tons/sq. inch. As per the standard specifications of A.B.C. Couplers, the pin should have been of high tensile steel with an ultimate breaking stress of 75-85 tons/sq. inch.

(d) The wheel gauge and flange thickness were carefully checked and found within permissible limits. There were no marks of skidding on the wheels. At my request, the locomotive was subjected to weighment. There was no significant variation in the wheel loads. The coil springs and snubbers were examined by the Chemist and Metallurgist and the District Mechanical Engineer (Diesel). Results did not reveal any shortcomings which would render the locomotive unroadworthy.

46. *The Coaches* (a) The 10 unaffected rear coaches and the 12th coach which had derailed of its leading trolley were inspected at Samuktala Road on 2-10-67 and later over the pit line in the station yard at Alipur Duar. No major defects were noticed. The 11 derailed/capsized coaches which were still at site were checked in respect of : the condition of axle boxes, axle brass, extent of wear on wheel treads, flange thickness, wheel gauge, bearing springs, etc. There was nothing abnormal, except that the bearing metal in some axle box had expanded : the rear axle (leading trolley) of the 10th coach and both axles (trailing trolley) of the 9th coach were bent—obviously as a result of these coaches being lifted up and thrown over to the left. The total lateral clearance between axle box groove and axle guard was slightly in excess on some axles of the 4th, 11th and 12th coaches. A few dents were seen on the wheel tread/flange of left wheels of the 1st, 2nd, 3rd, 5th, 6th and 7th coaches. None of the coaches was overdue periodic overhaul, or re-packing and oiling.

(b) The superstructure of the Dining Car had been completely burnt. The underframe was deformed and its leading end contained the rear buffer head of coach 105 FC which had broken away, an evidence of the large vertical force that had come into play between the two coaches. In the location where the kitchen was, the oven lay about with some partly burnt coke. There were four fire places. The back steel plate of the oven could be identified and charred remains of the asbestos sheet fixed to it could be seen. Portions of asbestos rope wrapped round the steel chimney were visible. At my request, the products of combustion in the Dining Car were got examined by the Inspector of Explosives, Calcutta, and he has reported that the fire was not caused by an explosion.

47. *The Track* —(a) The line had been restored for traffic by the time I reached there. I was told that the track had been touched up only to the extent required for crane working and to pass traffic at a restricted speed. The affected rails and other track components had been preserved and photographs depicting the position in which they were found after the accident were shown to me.

(b) *Marks of derailment*—(i) The first mark of derailment was noticed on a sleeper 30 feet 8 inches ahead of KM 245/5 on the straight, about 67 feet from the end of a 2° curve. This sleeper was reckoned as '0' and the corresponding rail panel as 1. The sleepers and rail panels from thereon were numbered consecutively in the direction of motion. No marks of mounting were noticed on the rails, but about 5'—6" in rear of '0', there were marks of hard rubbing against both rail heads. The wheel mark on sleeper '0' was about 6½" from the left gauge face on the inside; on the right, the outer dog spike had been dented and pressed into the sleeper. A careful examination of the track revealed that right up to sleeper 378 at KM 245/10 on rail

panel 25 (over a distance of about 940 feet), the wheel marks were of the same pattern—on the left, impression on sleepers at approximately 5" to 7" from the gauge face on the inside, with hit/graze marks on inner dog spikes and rail anchors here and there on the right, marks on sleepers and outer dog spikes several of which had been pressed into sleepers clear of the rail flange, denting and shearing off of fish-bolts/nuts at rail joints (generally the 4th) and part shearing of the upper lip of fish plates at the leading end. In some cases every alternate or 3rd/4th sleeper was dented, the sleepers in between being intact. It was apparent from these marks that a single pair of wheels had jumped off the rails near sleeper 'O' (without riding on the rail table), the left wheel dropping inside and the right wheel outside the gauge face.

(ii) From rail panel 25 to 34, the affected track had been taken aside (except the 25th rail on the left) and new track put in. Sleepers 379 to 408 in this portion (rails 25 to 27) had more than one mark; even so, the pattern noticed earlier could be traced on these as well. The marks were irregular on sleepers 422 to 495 (rails 28 to 32) and they had been severely damaged. The rail seats were crushed and the right half of many sleepers missing. Thence to sleeper 679 on rail 44, corresponding to the position of the derailed loco wheels, the same pattern of wheel marks as between KM 245/5 to KM 245/10 appeared. In this stretch, almost every sleeper had been dented (except 4 near rail joint 36/37) possibly due to the slower speed and in some joints all the 4 bolts had snapped.

(c) *The Ruptured track*—The first point of non-continuity in the track noticed by the Assistant and District Engineer (who arrived at the site of accident at about 04.50 hours on 28-9-67) was at the right Rail Joint R27/R28 (R=right rail ; L=left rail). This was also seen by the Superintendent, Railway Police (who reached the site at 07.00 hours on 28-9-61) and he had the rail ends marked A1, A2, R28 (A2-A3 according to the Police marking) had been displaced from its original position and lay under coaches 105 and 317. One fish intact, without nut, was seen lying outside the right rail near this joint. There were no fish plates or other bolts at the spot. On the 29th September when coach FC 105 was lifted, two fish plates were found between sleeper 424 and 425 (3rd and 4th sleeper on rail 28) and one fish bolt without nut nearby. Another fish plate bolt without nut was seen 10 feet north of R28 by the Officer-in-Charge, Government Railway police, and all these materials were taken into custody by him—para 40. A badly bent rail 34'—41½" long was located north of coaches 1745 and 2023. One end of this rail had a fractured surface and the other end had dug itself into the ground. This rail was identified as R29 and the broken end was that facing the direction of motion. The broken piece was not traceable. R30 (A4) and R31 (A5) were displaced, uprooted from the sleepers and tilted, the facing end of R50 resting on L30. Joint R30/R31 (A4/A5) was intact, but joint R31/R32 (A5/A6) was separated. No fastenings of joints R28/R29, R29/R30 and R31/R32 were seen in the vicinity. Joint R32/R33 (A7/A8) was also open, but the fish plates and snapped bolts could be found alongside. On clearance of the debris, 4 fish plates (2 in good condition) probably of joints R29/R30 and R31/R32 were reclaimed from the contiguous area. On 7-10-67, a broken piece of rail 4'—10½" long, with fish plates bolted to it was noticed sticking to the underframe of the 4th coach. Its fractured end tallied with that of the longer piece (R29) and the total length also matched that of L29.

The Rails on the left were continuous right through.

(d) *Materials in police custody*—(1) Two fish plates bearing stamp marks inner—A16858 and outer—8963, collected from under coach 105 FC. The bolt holes were normal. The inner fish plate was slightly bent inward, with dents on the upper lip and on the top edge at both ends. There were hit marks on both the fishing plates. The outer fish plates had two dents on the lower fishing plate. The nature and disposition of the indentations suggested that these could not have been caused with the fish plates in position on the rails. The fishing plates getting injured was significant in as much as these would be exposed only if the fish plates were removed from the rail joint and not otherwise.

(ii) 3 fish bolts, full length, without nuts. Of these, one was absolutely intact, while the others were slightly bent and 2/3 threads in each hit and flattened out. Having regard to the location from which these bolts were picked up and their condition, it could be inferred that in all probability they were of joint R27/R28 and had been opened out prior to the arrival of 4 Down Assam Mail.

(iii) 5 broken bolts—one bolt without head but with nut on, picked up from a spot 12 feet North of coach 317—may be of joint R28/R29 or R29/R30; two bolts 1 ft. North of coach 1745—likely of joint R31/R32; and 2 bolts of joint R5/R6.

(iv) 5 dog spikes of sleepers, in the disturbed area.

(e) *The fractured rail*—The 34'-4½" long piece of R29 had been bent into an 'S' curve. An examination of the fractured surface of the two pieces indicated that it was fresh, crystalline and was the result of the rail being subjected to heavy lateral forces tending to tear the front portion away from the gauge towards the right. The Metallurgical Report on this rail fracture has not been furnished by the Railway. It is noted from the report on the analysis of a cut-piece of this rail that it was manufactured from steel more or less similar to IRSST 12-64 and that the findings of the macro-micro examination are satisfactory. It is obvious that the right rail breakage was as a result of the crash.

(f) *Condition of track*—An extract of the joint track measurements recorded on 28-9-68 of the stretch in the rear of sleeper 'O' (on which the first marks of derailment were noticed) is contained in Annexure III. It is seen therefrom that, the cross levels were out by ¼" in 8 consecutive sleepers behind the first point of drop, the right rail being low—and in the sleeper immediately in rear of 'O', the difference was as much as 3/8". The gauge was 1/16" to 3/16" slack. On the 2° curve the cant was not uniform and the variation between adjacent sleepers was 1/8" in a number of cases; in one (sleepers 112/113) it was 1/4" and in another (sleeper 126/127) 3/16" (maximum spacing of sleepers = 2'-6"). The versines measured on a 62 ft. chord at stations 31 ft. apart (Annexure IV) showed appreciable irregularities: The length of transition was stated to be 124 ft. but the prescribed super-elevation had been attained in less than half this length at the fore end. The cant gradient in some portions of the transition at the leading end of the curve was about 1 in 240. The track in this portion—evidenced by the low spots (from the joint track measurement of the portion ahead of the site of accident, it was noted that the right rail was low by 3/8" on several sleepers and on one by 7/16"), the irregular alignment on the 2° curve, use of soft wood sleepers without bearing plates and the wide spacing of sleepers observed at certain joints in rear of the first point of drop with only two dog spikes per rail seat—was apparently not maintained to a satisfactory standard.

(g) *The Open Joints*—Of the four significant points of discontinuity—R27/R28(A1/A2), R28/R29 (A3/*), R29/R30 (*A4) and R31/R32 (A5/A6), the separation at joint R31/R32 was obviously the result of the accident, as evidenced by the broken fish bolts found in the proximity and the fish plates recovered from the debris. Others in respect of which no such conclusion was apparent were examined carefully and the following points emerged.

(i) *R27/R28*—Running off end of R27(A1)—There was a lip or burr on the fore end as a result of the metal being forced out and the rail table getting flattened. The fish bolt holes were normal. This could happen only if the rail end was subjected to wheel loads without the fish plates in position.

Joint sleeper had been crushed beyond the outer edge of rail flange and both dog spikes were missing.

*[Rail R29 which was located subsequently does not bear any Police marking.]

Running on end of R28 (A2)—Pushed out from R 27 7'-6" longitudinally and 5'-6" laterally as a result of impact of wheels. Fish bolt holes were normal. The rail end was battered.

There was a dent on the inner edge of the rail flange (which was also bent down a little) from contact with a metallic object. The facing end of R28 was bent to the right away from the gauge. There were two sharp thin linear markings on the rail table for almost the full length. These were not the riding marks of a wheel flange and appeared to have been caused by a sharp metallic edge passing over the rail head.

The joint sleeper had been crushed and damaged and dog spikes were missing. Of the next sleeper, only a piece remained. In the 3rd and 4th, the portions below the rail seat were damaged, the inner dog spikes pressed into timber and the outer deficient.

The 'running off end' of R27 and the 'running on end' of R28 were under the derailed coach FC 105. Obviously they could not have been disconnected and manoeuvred into place after the accident. One fish bolt, intact without nut, lying outside the right rail near the joint was noticed amongst others by the Officer-in-charge and the Superintendent, Railway Police, shortly after 07.00 hours—para 39. When coach 105 was lifted, two fish plates were found between the 3rd and 4th sleeper of R28. Two more fish bolts, full length without nut were picked up by the Officer-in-charge, Railway Police—one 10 ft. north of R28 and another beside the two fish plates under coach 105—para 40. The Assistant Security Officer on arrival at site at 04.15 hours made arrangements to cordon the area—para 41. The Officer-in-charge, Railway Police, found at 05.15 hours when he reached the spot that it was being guarded by the Army Jawans, Police and the Railway Protection Force—para 40. The Superintendent, Railway Police, also testified accordingly—para 39. As such, no materials could have been implanted at site after the accident. The evidence available leads to the conclusion that the fishplates and bolts were of joint R27/R28 and the track had been deliberately disconnected at this joint.

(ii) R28/R29—Running off end of R28(A3)—Rail table as well as fish bolt holes normal.

Running on end of R29—The broken 4'-10½" piece recovered on 7-10-67 had fish plates attached to it. The rail end and the fishing planes were normal. The bolt holes were slightly elongated, but this appeared to be an old condition. The fish plates had dents on the upper lips in front and a portion of the upper lip of the inner fish plate had sheared off. The fish bolt heads (gauge side) had hit marks.

Indications were to the effect that the joint had been forced out by passing wheels.

(iii) R29/R30—Running off end of R29 (bent rail)—Quite normal. Running on end of R30 (A4)—The end was dented and the rail table deformed. There were wheel tread as well as flange marks on the rail head which had been bent downward. The outer fish bolt hole was flattened and had become oval. The front end of R30 was bent inward (towards the gauge).

No intact bolts (or identifiable fish plates) other than those detailed in para 47 (d) having been found, any suggestion that the track was tampered with at this joint, viz., R29/R30 would be untenable. It appeared that the dismemberment of this rail joint was the result of derailed wheels passing over it.

(h) Rainfall—I was informed that there was no rainfall at the site on 28-9-67. When I examined the track on 1-10-67, the ballast under the sleepers was rather moist. The old consolidated formation, was in satisfactory condition.

VI—DISCUSSION

48. *Time of Accident*—(a) 4 Down Assam Mail passed through Samuktala Road—

AT 03·08 hours according to the Driver;

AT 03·07 hours according to the Guard;

AT 03·14 hours according to the Assistant Station Master Samuktala Road.

The Station clock being out of order, the Assistant Station Master had noted the time from his wrist watch which was 6 minutes faster than the watch of the train Guard, compared on the same day. Taking this into account, the Station time would be 03·08 hours. The distance from Samuktala Road to the point at which the first marks of derailment were noticed near KM 245/5 is $KM\ 245\cdot34 - KM\ 242\cdot29 = 3\cdot05\ KM$. Assuming (but not accepting, for the reasons mentioned in para 49) that the Driver ran at a speed of 61/62 Kmph through Samuktala Road and beyond as stated by him, the time taken to cover this distance is about 3 minutes. On this basis, the calculated time at which the train became derailed near KM 245/5 works out to 03·10 hours, taking into account the Guard's record and 03·11 hours, reckoned on the Driver's timing which agrees with that of the station.

(b) Driver Bhola said that the time on the clock of the Speed Recorder, when his locomotive came to a stop, was 03·14 hours. According to the Guard, the time was 03·15 hours. It is unlikely that the time could have been noted by them immediately the accident occurred. Allowance has therefore to be made for the inevitable time lag.

(c) Considering that the crash took place 1000 to 1500 ft. ahead of the first point of wheel drop, the time the accident occurred is assessed to be 03·10 to 03·12 hours.

49. *Speed at Derailment*—(a) It is unfortunate that the Tachograph of the Locomotive Speed Recorder was not fitted with the recording chart.

(b) From an examination of page 52 of the Locomotive Driver's Report (photostat copy at Annexure V*), it is observed that the first entry in the speed column against KM 244 at 03·10 hours was 80, which was corrected to 70 and later to 60. When questioned, the Driver's Assistant who made the record explained that this was due to the "jerking motion" and his hand was not steady (para 19). None of the other entries in this page or in others previous, contain such significant over-writing. I cannot accept this explanation and consider that the first entry of 80 Kmph. was not fortuitous.

(c) (i) On 28-9-67, 4 Down Assam Mail was detained at Jorai for the unscheduled crossing of 3 Up Mail and was running 22 minutes behind time. The timings from thereon as given by the Driver, Guard and the Assistant Station Master concerned are :—

	Driver	Guard	Assistant Station Master
Jorai-Departure	02·47	02·50	02·50
Kamakhyaguri—run through	02·59	02·58	02·52†/02·59‡
Samuktala Road—run through	03·08	03·07	03·00†/03·08*

*Not Reproduced.

†Untallied, time, corresponding to the "train entered section" and "train out of section" signals received from stations on either side.

‡Corrected time after tallying with the Guard's watch.

It is noted that the time taken for the journey from Jorai to Kamakhyaguri is 12 minutes according to the Driver, 8 minutes according to the Guard and 9 minutes according to the station records. Between Kamakhyaguri and Samuktala Road the time is 9 minutes according to the Driver, Guard and Assistant Station Master Samuktala Road and 8 minutes according to the Assistant Station Master, Kamakhyaguri. While the Driver's and Guard's time in respect of the run from Kamakhyaguri to Samuktala Road tallies and also accords with that of the stations, there is no reason why the timings at Jorai should be different. Difference of a minute or so is understandable, but not a variation of 3 minutes. I would, therefore, accept the time of departure from Jorai as 02.50 hours, which is the time recorded by the Guard as well as the Assistant Station Master.

(ii) Taking the journey from Kamakhyaguri to Samuktala Road—a distance of 10 Kms—as performed in 9 minutes, the average speed in this stretch works out to 67 Kmph. If the journey time is reckoned as 8 minutes as per the records of the Assistant Station Master, Kamakhyaguri, this average speed will be 75 Kmph. According to the Loco Inspector (Diesel) who travelled in the train engine up to Fakiragram on 27/28-9-67 to ascertain the acceleration time taken by Diesel Locos working Mail trains, YDM4 class locos take 9 minutes 45 seconds to accelerate to 65 Kmph from stop. This means that a speed of 65 Kmph started from Jorai could be attained only on the run between Kamakhyaguri and Samuktala Road and as there was a restriction of 50 Kmph over the siding points at Km. 228 between Jorai and Kamakhyaguri, the speed at which the Driver passed Kamakhyaguri was only of the order of 55–60 Kmph. Correlating this with the average speed of 67/75 Kmph mentioned above, it would appear that the Driver ran through Samuktala Road at a speed not less than 76/80 Kmph (as against the authorised speed of 65 Kmph).

(d) From the above discussion and considering the nature/extent of damage to the Locomotive and Coaches, I am led to conclude that the Speed of 80 Kmph corresponding to 03.10 hours on 28-9-67 recorded initially by the Assistant Driver in the Locomotive Driver's Report—sub para (b) previous—represented the correct state of affairs and the speed at the time of the accident occurred was probably higher—in any case, not less than 80 Kmph.

50. *The derailment at Km 245/5—(a) The vehicle that derailed*—As stated in para 47(b) a single pair of wheels jumped off the rails to the right near sleeper 'O' (KM 245/5) and the same pattern of wheel marks was discernible from that point, right up to where the rearmost wheels of the Locomotive were found derailed. The displacement of several dog spikes on the right in a clockwise manner, the characteristic distortion of grains of some wooden sleepers along the plane of contact with the wheel showing a flow in the backward direction and the skipping of a few sleepers here and there seemed to indicate that the derailed wheels were "driven" and not "mere carrying". The derailed left wheel of the loco had as many as 41 dents on the edge of wheel tread, as against a maximum of dents on the left leading wheel of the first coach 2426, pointing to the fact that this loco wheel had made a larger number of contacts with track components than any other—this could happen only if it travelled in a derailed condition over a longer length than others. Reconciling this with the grazing/hit marks on the edge of several inner dog spikes and rail anchors on the left between KM 245/5 and KM 245/14, I am of the opinion that it was the locomotive YDM4 6128 which derailed of its rearmost pair of wheels at KM 245/5 and travelled in this condition till it came to a stop near KM 245/14.

(b) *The cause—(i)* No obstruction on the track was noticed by the Driver of 4 Down Mail (para 18). Soon after the accident the Assistant Mechanical Engineer and the Assistant Engineer went by a light engine up to beyond Samuktala Road looking for possible obstacles along side the track, but did not find any.

The first point of rupture in the track was at rail joint R27/R28—para 47(c). The derailment occurred about a 1000 ft. in rear of this joint. As such, an obstruction at this joint or ahead of it was not the cause. Even assuming for the sake of argument that the pair of wheels which derailed near KM 245/5 belonged to one of the derailed coaches—11th or 12th as suggested by some witnesses, it does not stand to reason that the locomotive meeting an obstruction between KM 245/10-11 could cause the 11th or 12th vehicle in rear to go off the rails. If this were possible, the 15th or 16th coach should have derailed at sleeper 'O'. But all the coaches from the 13th to 22nd were on the rails. It cannot also be accepted that the derailment was perhaps the result of a sudden application of brakes near about KM 245/9-10 on noticing an obstruction on the track ahead. The Driver's testimony is otherwise and there were no marks of skidding on the loco wheels—para 45(d), or on the rails. It is also difficult to envisage the possibility of an unknown person interposing an obstruction under the running wheels and removing it, or clamping an obstruction on the right rail in such a manner as to leave no tell tale marks. Any suggestion to this effect would obviously be far-fetched and unacceptable.

(ii) The District Mechanical Engineer (Diesel) reported after a thorough examination that there was no defect in the locomotive which would have caused or contributed to the derailment and the associated accident—para 28. My own observations as well as the results of weightment and examination of springs/snubbers confirm this conclusion—para 45(d). There were three outstanding items of repairs booked on the loco by the Driver at Gauhati on 27-9-67. In the opinion of the District Mechanical Engineer, Alipur Duar, these would not affect the roadworthiness of the loco in any way—para 29; I agree. There was also no defect in the coaching stock as could have caused or contributed to this derailment—paras 29 and 46(a). The rake had been duly examined by the Train Examiners at various stations en route, the last such examination being at Gauhati—para 27—and found road-worthy.

(iii) Shri R.K. Mitra travelling in FC 317 (7th coach) stated that his bogie had vertical bumps near about the site of accident and there was also lateral movement—para 23. Lt. Gen. Khanna, also travelling in coach 317, found it difficult to balance himself without holding the sides of the corridor while coming back from the bathroom. He felt the track to be uneven and said to himself "I hope there won't be a mishap. . . . I think this train is going to derail" and then immediately after it did derail—para 24. It therefore appears that the train was running very rough in the proximity of the site of accident giving rise to grave apprehensions in the mind of Lt. Gen. Khanna. It may be seen from para 47(f) that the general condition of track in rear of the site of accident was not altogether satisfactory, the alignment being poor and the cross levels out at several places. A train travelling at speeds in excess of 60/65 Kmph on such track would, doubtless, be subjected to excessive oscillations both in the vertical and lateral directions. As brought out in para 49 the speed of the train in the vicinity of the site would not have been less than 80 Kmph.

In the light of the foregoing, I have to conclude that the derailment of the locomotive of its rearmost wheels was in all probability the result of high speed, in combination with irregularities in the approach track in respect of alignment and levels. It appears that the right wheel on the sixth axle of the loco got off loaded to the critical extent just in rear of sleeper 'O' and the concurrent lateral forces pushed the axle out of the track to the right. It is well known that a locomotive reacts more sharply to track irregularities at higher speeds and there is no doubt that on the fateful day, the speed of 4 Down Assam Mail was appreciably in excess.

51. *Damage to the cattle guards*—(a) The following observations and comments are pertinent in this connection :—

- (i) The locomotive had met with and mounted a substantial obstruction on the alignment of the right rail—para 45(a). The leading right wheel of the loco had no tell tale marks, but the sandpipe in front was hit and pressed against the wheel by the obstruction and got detached; the sandpipe bracket was broken and bent. To cause this, the obstruction must have been quite above the rail level. The sandpipe was located about 100 ft. ahead of joint R. 27/R28, probably dragged to this position by the derailed wheels. There were sharp dents on the edge of wheel tread of the intermediate and trailing wheels of the leading trolley caused by hitting the obstruction. The dent on tread and grazing marks on the outside of the leading and intermediate wheels of the trailing trolley indicated that they had hit the obstruction, displaced it to the right and rubbed against the same.
- (ii) The leading and trailing cattle guards encountered a 60 lb. rail head; the same rail could not have hit both of them, unless after meeting the leading cattle guard and the leading right wheels it got bent or deflected to the right, i.e., away from the gauge—para 45(b).
- (iii) As the locomotive was on the rails except for the rearmost wheels, the damage to the cattle guards was not the result of the accident and was caused by the obstruction referred to in sub para.(i) above.
- (iv) The front sheet of the leading cattle guard 3/16" thick was pierced and the bottom plate 9/32" thick was also torn. This could never have occurred, unless caused by a track rail prized up but fixed along its forward length.
- (v) The first point of rupture in the track was at joint R 27/R28 and evidence showed that the rails at this joint had been disconnected prior to the arrival of 4 Down Mail. The facing end of R28 was bent to the right, away from the track axis and there were indications that the rail head as well as the flange had hit a metallic object. Its running on end was battered.

It is inferred from the above that it was a disjointed track rail displaced upwards at the facing end that hit/pierced the cattle guards. Such displacement could not but be deliberate. The first point of discontinuity being at joint R 27/R28 it follows that the running on end of R28(A2) which had been unfished was raised in the same alignment by 7" to 8" above the normal rail level. The bending of this rail to the right (away from the track axis) also fits in with the disposition of the 'tear-aways' in the cattle guards. The sharp linear markings on the rail table could well be the scratch marks made by the sheared edges of the leading cattle guard.

(b) From a demonstration arranged on 8-10-67 at KM 244/14-15 it was seen that a rail joint could be disconnected and the rail end raised by $4\frac{1}{2}$ " in a matter of 8 minutes, with a contingent of 2 men equipped with a crowbar and spanner. On 28-9-67 there was a clear interval of about 30 minutes after the passage of 766 Down Goods till the arrival of 4 Down Mail—more than ample for miscreants to open the rail joint and push up the facing end of R28 (A2) to the extent of 7" to 8" , by packing under over a short length. The packing materials could be large size stones, track ballast or even fish plates.

52. *The Crash at 245/10-13*—(a) There was a ridge in the bank almost commencing from opposite joint R27/R28 indicating that the ploughing of the formation by the derailed coaches was from this point. From a study of the configuration attained by the leading coaches after the accident, it appeared that with rail R28 getting disaligned as a result of impact of the loco wheels which passed over, the first coach derailed on the ground causing the coaches in rear

to bunch up; hence the crash. The locomotive still on the run struggling to draw the stock behind over the obstruction at rail joint R27/R28, brought excessive drag to bear on its coupling. The coupling pivot pin got sheared and with its giving way, the locomotive parted from the train formation. The resulting snatch caused the loco to move forward and stop 236 ft. away. The finding of the loco rear buffer head 228 ft. behind, i.e., just ahead of where the first coach had come to rest would indicate that the parting took place somewhere in this region.

(b) As stated in para 45(c) the coupling pivot pin of the trailing coupler of the loco was of substandard material, the Chief Mechanical Engineer of the Railway was of the opinion that even if the pivot pin was made of the specified steel (class IV, according to him), it could not have withstood the high snapping force which came into play during the accident. I am inclined to agree with him.

(c) The kitchen of the Dining Car had four 'chulahas' and the fire in them had not been put out when the staff retired for the night—paras 42 to 44. When the Dining Car capsized, the burning coal from the fire places was thrown all over and with necessary fuel being provided by the wooden splinters of the superstructure, fire broke out. There is no evidence of any inflammable materials having been carried in the Dining Car. The fire was not caused by any extraneous source—para 46 (b), and was the direct result of the wooden body breaking up during the capsizement and the pieces feeding the live embers of the fire places in the kitchen.

(d) Diesel locomotives of the YDM 4 class are provided with the "wheel slip warning" device, by which a wheel slip on the loco is indicated by a buzzing in the cab. The reading of the "load meter" is also another means by which wheel slip may be detected. The derailment of wheels on the sixth axle of the loco at KM 245/5 and their riding light with the axle hung traction motor keeping them revolving, would probably create conditions somewhat similar to a wheel slip and in the normal course the Driver should have become aware of this derailment. In his evidence the Driver made no mention of the warning buzzer, but stated that the derailment of any of the rear coaches on the run would have shot up the reading in the load meter, "provided the throttle is not advanced from one position to the other and that the throttle has been kept in any notch position other than idle". He averred that he had looked at the load meter from time to time and there was no such indication. While it is not expected of the driver to keep an uninterrupted watch on the load meter, the fact is that even if he had become aware of the derailment at KM 245/5 (either by the indication in the load meter, or by the wheel slip warning buzzer if in operation), the subsequent events followed on such quick succession (30 seconds or so) that there was little he could do. The crash started in about a 1000 ft. from the first point of derailment and the calculated braking distance of the train with an average vacuum of 52 cms. works out to 1973 ft. at speed of 62 Kmph; it would be more at higher speeds.

(e) The crash occurred on the straight ahead of a 2° curve and the visibility under the engine head light was normal. The obstruction on the track was in the nature of an open rail joint with the running on end of the connecting rail raised in the same alignment. In terms of General Rule 122 the Driver is to keep a good look out while the train is in motion. In this case, even if the Driver had kept the eyes constantly on the track ahead, it would have been impossible for him to detect the discontinuity of the track and stop the train in time.

(f) It is difficult to visualise what would have happened to the train travelling with the engine derailed of its rearmost wheels at KM 245/5, if the track had not been tampered with at rail joint R27/R28 (KM 245/10-11). It is likely that the Driver on becoming aware of the derailment, would have brought the train to a stop with little or no ill effect, or the train might have come to grief at some point ahead with similar but less disastrous consequences.

VII—CONCLUSIONS

53. *Cause*—On full consideration of the factual, material and circumstantial evidence I have reached the following conclusions:—

(a) The crash of 4 Down Assam Mail at KM 245/10-13 between Samuktala Road and Salsalabari stations shortly after 03.10 hours on 28-9-67 was the result of a deliberate act of sabotage—a rail joint was unfished, some fastenings were removed and the running on end raised—by person or persons unknown.

(b) The derailment of the train locomotive at KM 245/5 which preceded the crash, was in all probability caused by high speed in combination with irregularities in the track.

54. *Responsibility*—(a) In respect of the crash at KM 245/10-13 which resulted from an act of sabotage, no responsibility lies on the Driver. Detection of the open rail joint in time being an impossibility, the Driver could not have averted the accident.

(b) In respect of the Derailment at KM 245/5, (i) I cannot but hold the Driver of 4 Down Mail responsible for driving the train significantly in excess of the authorised maximum speed on the section. He contravened the provisions of General Rule 89(b) and Subsidiary Rule 89/2 of the North East Frontier Railway—reproduced in Appendix 'A'.

(ii) The excessive speed at which the train was being driven may not by itself have caused the derailment, which in this case was brought about by a combination with track defects. The state of unsatisfactory track maintenance had been amplified in para 47(f). It is not possible for me to assign responsibility on any individual or individuals for the track not being maintained to satisfactory standards.

[Driver Bhola, 48 years old, was appointed over thirty years ago as an Engine Cleaner. He became a Driver in 1944 and was promoted to 'A' Grade in 1960. He passed the Diesel Driver's Course in June 1966 and had been operating Diesel Engines on Mail trains since April 1967. There is no adverse entry in his record of service. He was rewarded on two occasions for effecting economy in coal consumption.]

55. *Relief Measures*—The Railway staff on the train which included the Chief Commercial Superintendent and two Doctors rendered all possible succour. They were greatly assisted in this task by the Army Personnel travelling on the train led by Lt. Gen. Khanna. Full scale medical relief reached the site within 2 hours of the accident. I consider that relief measures were as prompt and efficient as could be expected in the circumstances.

सत्यमेव जयते

Yours faithfully,

(Sd.) (P. M. N. MURTHY)

Additional Commissioner of Railway Safety

Dated 11-4-1968.

Government's views on paras. 53 and 54 of the Report.

While the Government accept that the crash of 4 Down Assam Mail at Km. 245/10-13 between Samuktala Road and Salsalabari stations was the result of a deliberate act of sabotage, they are unable to agree that the train locomotive had derailed at Km. 245/5 prior to the crash of the train, due to high speed in combination with irregularities in the track. The geometry of the YDM 4 locomotive does not permit the wheels of only one axle to be derailed under conditions of track irregularities that obtained in the vicinity of the accident site even in combination with the wear on the flanges, maximum lateral tolerance and at a speed of 80 Kmph. In the circumstances the Government are unable to accept the conclusion of the ACRS that in all probability the train locomotive derailed at km 245/5 due to high speed in combination with irregularities on the track. The evidence on record is not adequate to establish conclusively which vehicle derailed at km 245/5 and why.

APPENDIX A

Extract from the "General Rules for Indian Railways with the Subsidiary Rules of the North East Frontier Railway"

G.R. 89. Limits of speed generally

(b) The Driver shall regulate and control the running of his train as accurately as possible, according to the Working Time Table, so as to avoid either excessive speed or loss of time; he shall not make up between any two stations more time than is allowed in this behalf by special instructions and shall observe all temporary speed restrictions.

.....

S.R. 89/2—The maximum sanctioned speed for the section of line over which the train is running, as notified in the Working Time Table, that is in force at the time, must under no circumstances, be exceeded.



**RECOMMENDATIONS/INCIDENTAL OBSERVATIONS AND RECOMMENDATIONS
MADE BY THE COMMISSION OF RAILWAY SAFETY IN CONNECTION WITH DE-
RAILMENT OF 4 DOWN ASSAM MAIL BETWEEN SAMUKTALA ROAD AND
SALSALABARI STATIONS OF NORTHEAST FRONTIER RAILWAY ON 28TH
SEPTEMBER, 1967.**

I. RECOMMENDATIONS

1. It is essential that Speed Recorders on locomotives hauling passenger trains are properly maintained with the recording charts fitted on the tachograph. The awareness on the part of the Drivers that speed on the run are being recorded will prove a deterrent to over-speeding.

It is desired that short supply of recording charts should be made good without delay.

2. In addition to the speed checks enjoined in Subsidiary Rule 89/4 of the Railway, the timings recorded in the General Train Reports of Guards of passenger trains should be examined periodically by the Operating and Mechanical Officers and instances of over-speeding reflected therein taken up. Results of Scrutiny of the Guard's General Train Reports on 3 Up and 4 Down Mails from 20th to 27th September 1967 are enclosed.

3. (i) The standard of track maintenance between Samuktala Road and Salsalabari should be improved.

(ii) Bearing plates should be provided on oil treated sleepers and four dog spikes per rail seat used on joint sleepers instead of two as at present, in accordance with para. 648E(b) and 648F(a)(1) respectively of the Indian Railways Way and Works Manual.

(iii) The adequacy of the present gang strength may be examined and the number augmented as found necessary.

4. The quality of patrolling in the region should be improved by ensuring full compliance with the extant instructions of the Railway as incorporated in the printed 'Patrol Register'. If necessary, the length of beats may be reduced to increase the frequency of patrol.

In the context of the circumstances that led to the disaster, the question of enhancing the element of safety in Rail operation in the area which appears vulnerable to anti-social activity—para 24—should be further reviewed in consultation with the State Government and the Army Authorities.

5. It should be ensured that fire in the oven of Dining Cars is completely extinguished when the day's service is wound up and before the staff retire for the night. The manager of the Car should be made personally accountable in this regard.

Until such time as wooden-bodied dining cars give way to steel-bodied coaches, the advisability of lining the kitchen walls and roof with a layer of non-inflammable material may be examined.

II. INCIDENTAL OBSERVATIONS AND RECOMMENDATIONS

1. The Coupling Pivot pin of the A.B.C. Coupler (rear) of Loco YDM4 6128 which gave way was made of Class III steel and not High tensile steel as specified and indicated in Drg. No. L/BD-6053 (Not reproduced) (and confirmed by the Research, Designs and Standards Organisation). It may be investigated as to how the standard pivot pin came to be used in the loco coupler and necessary remedial measures taken.

2. The Vigilance Control of YDM 4 6128 was out of commission.

3. In locomotives of the YDM4 type, the Speedometer is at the back of the Driver when driving with the long hood leading, thus requiring him to turn round to look at it. It is desired that the Speedometer may be repositioned on one side of the Driving cab to facilitate continued reference to it when the locomotive is driven either way.

4. The procedure adopted by the Assistant Station Master, Salsalabari on 28th September 1967 in having the Down Distant at 90° aspect for 4 Down Mail which was to run through his station before obtaining line clear and taking off the Departure signals was in contravention of instructions in the Station Working Rules, *vide* note below Rule 28(b)(iii).

5. The Station clocks at Samuktala Road and Kamakhyaguri were out of order, the latter since 9th September 1967. From the discrepant timings of certain events recorded at Salsalabari it appears that the station clocks are not being notified to the stations, as required under SR 85/1 of the Railway.

6. Lt. Gen. Khanna in his evidence—included in the Proceedings*—has made certain suggestions to improve the quality of post-accident Relief operations. These may be examined by the Railway Administration.

7. No arrangements were made to collect or record the evidence of eye witnesses, or the statement of staff concerned as required under para. 5.09(viii) and 6.11(x) of the N.F. Railway's Accident Manual.

8. The location of the 6° curve between Alipur Duar and Salsalabari shown as at KM 257-244 in the Working Time Table in force from 1st April as well as 1st October 1967 is incorrect. The need to specify the exact location of a restriction in the Working Time Table is emphasized.

RAILWAY BOARD HAVE REMARKED AS UNDER ON THE ABOVE NOTED RECOMMENDATIONS, ETC.

I. RECOMMENDATIONS—

1. In accordance with the present policy, speed recording instruments with tacho-charts are to be provided in locos hauling Mail/Express trains. For locos hauling other passenger trains, only speed indicating instruments are to be provided.

Now all the locomotives hauling Mail/Express trains have speed-recorders with charts.

2. The Timings recorded in the Guard's journal are only approximate and thus cannot be relied upon to give an accurate indication of the actual speed. The speed recorder charts are checked regularly and irregularities noticed, if any, are taken up. Instructions also exist that additional sheets should be provided against every driver's record, wherein the result of checking speed charts should be indicated.

The driver is made to countersign this record sheet. This serves as a deterrent against over-speeding.

Necessary action has been taken by the Railway in reference to the 'Note' in the enclosure to this recommendation.

3. In view of the G.M.'s remarks, no further action is required.

4. As for improving the quality of patrolling; the Railway is already following the instructions incorporated in the printed patrol register.

*Not reproduced.

As for enhancing the element of safety in areas vulnerable to anti-social activities, it may be mentioned that on sections where there is likelihood of sabotage by Naga Hostiles, security patrolling is carried out by the Army/Armed Police/RSPF. The vulnerable area extends from Lunding to Siliguri (Main Line) and Lunding to Damerhara (Hill Section) of the N.F. Railway. Security patrolling is undertaken by the Police and RPF as and when the State authorities find that a section has become vulnerable to sabotage or when there is information that there is possibility of tampering with the track etc. Every assistance is given to the State police by the Railways whenever security patrolling is undertaken or advised by them.

5. The recommendation pertaining to the extinguishing of the fire in the ovens of Dining Cars when the days' service is wound up is accepted and instructions issued to the Railways to implement the same.

The other part of the recommendation has been accepted and has been examined in consultation with RDSO and it has been decided that as and when wooden bodied dining cars pass through workshops for POH the ceilings in the kitchen of these coaches should be replaced by limpet asbestos sheets which are fire resistant.

Further, two coats of fire retardant paints should be applied to the panelling in the kitchens of timber bodied dining cars.

II. INCIDENTAL OBSERVATIONS

1. The Railway would be asked to intimate the results of investigation to CRS.

2. The RDSO are already seized with the problem of erratic operation of vigilance control. Necessary action in the matter would be taken.

3. R.D.S.O. have been asked to evolve a suitable arrangement either for re-locating the existing speedometer on YDM-4 locomotive or for providing an electrical speedometer mounted suitably on the control stand so that the Driver can see it while driving with long-hood leading.

4. & 5. In view of the General Manager's remarks against these items, no further action is required.

6. It is already the policy to provide fire extinguishers, first-aid equipment, emergency lighting equipment, emergency tool-box and portable control phone in every passenger train. First-aid is provided to the victims without any avoidable delay. The duties of the various officials on a train when accident takes place, as well as when they go to the site of an accident, have been clearly laid down. Railway Protection Force is also arranged in cases of serious accidents to make security arrangements.

In regard to provision of stretcher as a part of first aid equipment in the brakevan, this has been examined and not found feasible.

As for delineating the first aid post with a red cross flag/red cross light, it is considered that such an equipment will make the Guard's equipment unnecessarily heavy.

7. Suitable instructions are being issued to the Railways.

8. Necessary action has been taken by the Railway in this regard.

ENCLOSURE TO RECOMMENDATION NO. 2 OF APPENDIX 'B'

RESULTS OF SCRUTINY OF GUARD'S GENERAL TRAIN REPORTS ON 3 UP AND 4 DOWN ASSAM
MAILS FROM 20TH TO 27TH SEPTEMBER, 1967

I. *Section Changsari-Fakiragram*—Maximum permissible speed for YDM4 locos prepared for high speed operation=65 Kmph.

- (i) *Baihata-Changsari*—This Section 10 Km. long was covered by 3 Up Mail of 21st September, 1967 in 8 minutes, running through-(engine 6116 YDM4).

$$\text{Average speed} = \frac{10}{8} \times 60 = 75 \text{ Kmph}$$

- (ii) *Tihu-Kaithalkuchi*: 8 Kms. in 7 minutes by 3 Up Mail of 26th September, 1967 running through (engine 6115 YDM4).

$$\text{Average speed} = \frac{8}{7} \times 60 = 68.5 \text{ Kmph.}$$

There was a speed restriction of 15 Kmph at the Up facing points of Kaithalkuchi (item 5(b)(ii), page 56 of Working Time Table), which obviously was not observed.

II. *Section Fakiragram-Alipur Duar Jn.*: Maximum permissible speed for YDM4 locos prepared for high speed operation=75 Kmph, subject to a restriction of 65 Kmph through Station yards.

- (i) *Jorai-Srirampur Assam*: 10 Kms covered by 3 Up Mail of 22/23rd September, 1967 (engine 6115 YDM4) in 8 minutes, running through.

$$\text{Average speed} = \frac{10}{8} \times 60 = 75 \text{ Kmph.}$$

Either the speed restriction of 65 Kmph through station yards was not observed, or else, the maximum speed attained in the section was higher than permissible. There was also a speed restriction of 50 Kmph over the Up facing points of the Engineering siding in mid-section [item 5 (a) (ii), page 56 of the Working Time Table]. Obviously this restriction was not observed.

- (ii) *Kamakhyaguri-Jorai*: 8 Kms was covered in 6 minutes by 3 Up Mail of 21st September, 1967 (engine 6116 YDM4), 21st/22nd September, 1967, (engine 6108 YDM4), 22nd/23rd September, 1967, (engine 6115 YDM4)—all run through, 23rd/24th September, 1967 (6128 YDM4) starting from stop at Kamakhyaguri*, 24th September, 1967 (engine 6116 YDM4) and 25th September 1967 (engine 6120 YDM4)—(run through)

$$\text{Average speed} = \frac{8}{6} \times 60 = 80 \text{ Kmph.}$$

Apparently, the speed restriction of 65 Kmph through yards was not observed.

*Timing does not appear correct.

NOTE—As per C.O.P's/N.F. Railway's Circular No. T/240/3/Pt. IV dated 11th April 1967—

- (i) Booked time for the run through of 3 Up Mail from Tihu to Kaithalkuchi (8 Kms) is 8 minutes. Considering the 15 Kmph restriction at the Up facing points of Kaithalkuchi, the booked time should have been 10 minutes.
- (ii) Booked time for 4 Dn. Mail (run through) from Goshaigoan Hat to Srirampur Assam (7 Kms) is 6 minutes. Considering the restriction of 65 Kmph through the yards, the booked time should have been at least 7 minutes.
- (iii) Booked time of 3 Up Mail (run through) from Kamakhyaguri to Jorai (8 Kms) is 6 minutes. With the restriction of 65 Kmph through yards it should be at least 8 minutes.

Booked timings between other stations may also be checked.

(Sd.) P. M. N. MURTHY

Additional Commissioner of Railways Safety

